

REMARKS/ARGUMENTS

The present Amendment is in response to the Office Action having a mailing date of October 20, 2004. Claims 1-35 are pending in the present Application. Claims 19-35 have been withdrawn. Applicant has amended claims 4, 5, 6, 10, 11, 12, 14, 15, 16, and 17. Consequently, claims 1-35 remain pending in the present Application.

In the above-identified Office Action, the Examiner indicated that claims 4-7 and 11-17 would be allowable if rewritten or amended to be in independent form, incorporating the limitations of the base claim and any intervening claims. Applicant has amended claims 1, 11, 12, 14, 15, 16, and 17 to be in independent form and to incorporate the limitations of the base claim and any intervening claims. Claims 5-7 depend upon independent claim 4. Accordingly, Applicant respectfully submits that claims 4-7 and 11-17 are allowable over the cited references.

Applicant has amended claims 5 and 6 to remove recitation of method steps. Applicant has amended claim 10 to more clearly recite that the soft magnetic material exists within the core portion of the write line. Support for the amendment of claim 10 can be found in Fig. 4, item 109 and the specification, page 11, lines 10-14. Accordingly, Applicant respectfully submits that the scope of each of claims 5 and 6 have not been narrowed and that no new subject matter has been introduced.

In the above-identified Office Action, the Examiner rejected claims 5 and 6 as being in improper independent form for failing to further limit the subject matter of a previous claim. In particular, the Examiner objected to the recitation of methods steps in claims 5 and 6.

Applicant has amended claims 5 and 6 to remove recitation of method steps, which are unnecessary. However, claim 5 recites that the pinned layer is "located on top of the thin

insulating tunneling layer.” In contrast, claims 6 recites that the “pinned layer is located beneath the thin insulating tunneling layer.” Consequently, claims 5 and 6 recite magnetic elements in which the pinned layer and tunneling layer, and thus the free layer, have different relationships to the underlying substrate. Consequently, Applicant respectfully submits that claims 5 and 6 each limit the subject matter of a previous claim in a different manner. Accordingly, Applicant respectfully submits that the Examiner’s objection to claims 5 and 6 has been addressed.

In the above-identified Office Action, the Examiner rejected claims 1-3, 8-10, and 18 under 35 U.S.C. § 102, second paragraph, as being anticipated by U.S. Patent No. 6,538,920 (Sharma). In so doing, the Examiner cited Fig. 4a of Sharma as teaching a first write line and a second write line (118) that is electrically isolated from the magnetic element.

Applicant respectfully disagrees with the Examiner’s rejection. Independent claim 1 recites a magnetic random access memory (MRAM) cell including a first write line that resides below a magnetic memory element and that is electrically connected with the magnetic memory element in conjunction with a second write line that resides above the magnetic memory element and is electrically isolated from the magnetic memory element. Claim 18 recites an analogous MRAM. Because of the configuration of the write lines with respect to the magnetic memory element fabrication is simplified and the architecture exhibits better scalability to smaller MRAM cell sizes. Furthermore, particularly if magnetic or magnetic cladded write lines are used, the writing efficiency is also improved. Specification, page 22, lines 1-6.

In contrast, the cited portion of Sharma describes a magnetic memory element which is, apparently, physically and electrically connected to the memory lines. The Examiner has cited lines 116 and 118 and magnetic memory element 100a of Sharma as being analogous to the recited first write line, second write line, and magnetic memory element, respectively, of claim 1.

As can be seen in Fig. 4b of Sharma, although the lines 116 and 118 are orthogonal, the lines 116 and 118 both physically contact the magnetic memory cell 100a. Applicant has found no mention in the cited portion of Sharma of any insulating layer between the upper line 118 and the magnetic memory element 100a. Similarly, Applicant has found no mention in the cited portions of Sharma of the magnetic memory element 100a being isolated with respect to the line 116. Instead, Fig. 4b of Sharma indicates that the current, i , flows from the line 118 through the magnetic element 100a and out through the line 116. Consequently, both lines 116 and 118 of Sharma are electrically connected to the magnetic memory element. More particularly, the top line 118 of Sharma is electrically connected to the MRAM cell. Sharma, therefore, fails to teach or suggest a second write line that is above the memory element and electrically isolated from the memory element. Accordingly, Applicant respectfully submits that claims 1 and 18 are allowable over the cited references.

Claims 2-3 and 8-10 depend upon independent claim 1. Consequently, the arguments herein apply with full force to claims 2-3 and 8-10. Accordingly, Applicant respectfully submits that claims 2-3 and 8-10 are allowable over the cited references.

Furthermore, Applicant respectfully submits that claim 10 is separately allowable over the cited references. Claim 10, as amended, recites that the core portion of the first write line includes a soft magnetic material. In contrast, Sharma only discloses the use of magnetic cladding at the periphery of the write line. In other words, Sharma teaches only that the magnetic cladding may reside on the three edges of the write line not facing the magnetic element. Applicant has found no mention in Sharma of moving the magnetic material into the core. For example, Applicant has found no mention in Sharma of a core that consists essentially of a soft magnetic material. Applicant has further found no mention in Sharma of laminating at least a portion of the first write

line so that the core includes magnetic layer(s). Thus, Sharma fails to teach or suggest the first write line having a core including a soft magnetic material as recited in claim 10. Accordingly, Applicant respectfully submits that claim 10 is separately allowable over the cited references.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

SAWYER LAW GROUP LLP

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Date

/Janyce R. Mitchell/ Reg. No. 40,095
Janyce R. Mitchell
Attorney for Applicant(s)
(650) 493-4540